

**Hudson Bay Mining  
and Smelting Co., Limited**

**Annual Report 1971**





Forty-fourth  
annual meeting  
of shareholders

April 28, 1972,  
at the Royal York Hotel,  
Toronto, Canada

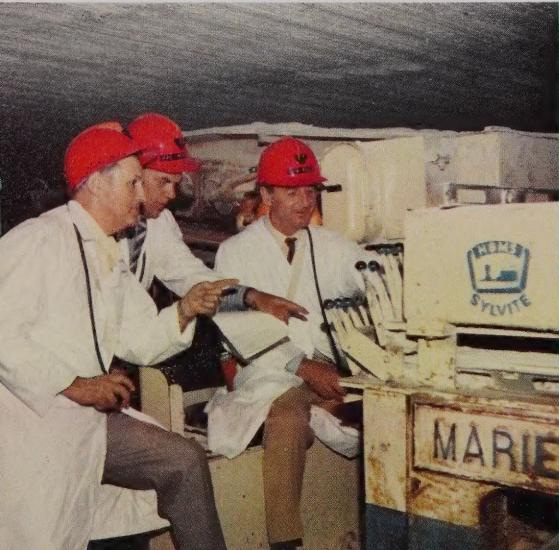
A request for proxies  
was mailed with this report  
to all shareholders  
during the latter part of  
March, 1972.

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cover photo	Compressed air is used to force blasting explosive into drill holes in Anderson Lake Mine in Manitoba.

# Hudson Bay Mining and Smelting Co., Limited

## Directors and Officers

**Examining the controls** on the four-rotor mining machine in the Company's potash mine are (l-r): Eric S. Austin, immediate past-president; Harold A. McKenzie, executive vice-president; Gavin W. H. Relly, chairman and chief executive officer.



### Directors

E. S. Austin  
Delta, B.C.  
Retired

H. R. Fraser  
Toronto  
Director, Charter Consolidated Limited

W. A. Green  
Riverside, Conn.  
Retired

A. T. Lambert  
Toronto  
Chairman and President, The Toronto-Dominion Bank

J. F. McCarthy  
Old Greenwich, Conn.  
Retired

H. C. F. Mockridge, Q.C.  
Toronto  
Senior Partner, Osler, Hoskin & Harcourt

W. A. Morrice  
Toronto  
President, Hudson Bay Mining

G. W. H. Relly  
Toronto  
Chairman, Hudson Bay Mining

M. W. Rush  
Johannesburg, South Africa  
Director, Anglo American Corporation of South Africa Limited

C. V. Whitney  
New York  
President, Whitney Industries, Inc.

### Officers

G. W. H. Relly, Chairman of the Board

W. A. Morrice, President

H. A. McKenzie, Executive Vice-President

C. O. Buchanan, Vice-President - Metal Sales

J. L. Carpenter, Vice-President, Secretary, General Counsel

L. W. Ogryzlo, Vice-President - Exploration

Dr. C. L. Sarthou, Vice-President - Marketing (Sylvite Division)

J. S. Warick, Vice-President - Mining

K. S. Dalton, Treasurer

G. A. C. MacRae, Comptroller

S. A. Hayward, Assistant Secretary and Assistant Treasurer

# Report of the Directors

## Introduction

The Company's mining and metallurgical operations at Flin Flon and Snow Lake in northern Manitoba were closed down from January 27, 1971, until June 21 due to a strike by 650 members of the Association of Flin Flon Trade Unions. For this reason, and because of lower prices for copper for the balance of the production year and increasing costs, profits were seriously reduced.

The strike was only the second since the original mine was established at Flin Flon in 1930. In the light of today's militant trade unionism it seems improbable that this remarkable record of industrial co-operation could have endured much longer, regardless of the Company's attitude in the matter. At the same time, the extensive social security arrangements that Canadians enjoy and the widespread development of credit as an integral part of our commercial practice provides a favorable background for strike action against which management can set very little.

Strike action is too well established as an industrial practice for its merits as such to be usefully debated at this time but it must certainly be a matter of concern if the strike weapon is used without any consideration of a company's welfare as a whole. If this is so, it will not be possible to sustain the viability of a number of operations in the mining industry, particularly in those areas where increased costs cannot be passed on in the price of the product.

It is not possible to ask that there should be no strikes but it is possible to ask that in return for this privilege there should be a genuine commitment by labor to the fortunes of a company so that labor itself contributes at least a portion of its increased share through higher productivity. A commitment to productivity in this sense is not primarily a matter of statistics but rather of attitude. Labor must ask itself whether it wishes to continue on a self-defeating course which will either eliminate an operation, or possibly the labor element in it, or whether in return for a bigger slice of the cake it can help make the whole cake larger.

At the same time, management must also ensure that its own house is in order. It cannot demand a more responsible outlook from labor unless it can demonstrate in turn a genuine responsiveness to the problems that face labor and its leaders in a

rapidly evolving society. These problems are no less real or important than those that face management itself and it would be a tragedy if, through changes in our society, labor were to modify its approach however slightly, and management were either unprepared or unwilling to respond.

We certainly wish to ensure in our Company's operations that we can move forward with the times to a responsible and effective era of industrial relations.

## Earnings

Shareholders should bear in mind that the strike and the consolidation for the first time of the operating accounts of the Sylvite potash division do not make all direct comparisons with previous years useful.

Net earnings during 1971 were \$3,008,977. The primary reasons for the sharp decline from \$19,563,052 in 1970 were, as noted in the introduction to this report, the effects of the strike, lower prices for copper, and rising operating costs. Secondary factors that contributed to the lower earnings were reduced revenue from export sales as the floating Canadian dollar moved closer to parity with the U.S. dollar and the 10% surcharge imposed by the U.S. Government on imports of zinc and zinc products.

Earnings per share in 1971 were 33¢, compared with \$2.16 in the previous year.

## Comparative financial summary:

	<b>1971</b>	<b>1970</b>
Operating revenue .....	\$ 61,684,920	\$ 87,160,970
Investment, other income .....	1,069,843	1,765,199
Net earnings .....	3,008,977	19,563,052
Working capital .....	40,786,511	31,947,459
Marketable securities .....	2,541,190	2,541,190
Investments in other companies .....	10,853,809	10,057,664
Long-term debt .....	28,354,000	—
Retained earnings .....	102,514,095	104,025,535
Earnings per share .....	.33	2.16
Dividends per share .....	.50	1.18½

## Dividends

In view of the strike, weak metal markets and the necessity to conserve cash for capital programs, the Board of Directors adopted a conservative dividend policy.

Total dividends for the year were \$4,520,417, equivalent to 50¢ per share, compared with \$10,698,234, or \$1.18 $\frac{1}{3}$  per share, in 1970.

With effect from the end of the September 1971 quarter it was decided to declare quarterly dividends towards the end of each quarter rather than at the beginning of each quarter as has been the practice in the past. Quarterly dividends will, therefore, be paid in future in April, July, October and January, under normal circumstances.

#### **Financial**

Capital expenditures during 1971 totalled \$22,005,670, of which \$2,918,460 was spent on the Sylvite of Canada potash project, \$6,565,515 by Francana Oil & Gas Ltd., and \$6,053,956 on the mine development and mill construction at the Wellgreen property of Hudson-Yukon Mining Co., Limited. The remaining expenditures were made principally for new mine developments in the Flin Flon - Snow Lake areas.

These capital programs were financed primarily by the sale in Canada on June 15, 1971, of \$25,000,000 of 9% 20-year debentures.

Capital expenditures for 1972 covering base metals, potash and oil and gas are estimated at \$20,000,000 but this figure may be altered in the light of a number of studies currently being undertaken.

The investment portfolio of stocks in Canadian companies is unchanged from a year ago. The market value of the stocks continued to be depressed and at year-end was \$587,596 less than the cost of \$2,541,190.

Working capital increased from \$31,947,459 at the end of 1970 to \$40,786,511 at the year-end.

#### **Taxation**

Bill C-259, an Act to amend the Income Tax Act, was passed by both the House of Commons and Senate in late 1971 and became effective on January 1, 1972.

The Company faces a significant increase in effective tax rates after the three-year tax-exempt period for new mines ends on December 31, 1973. Although it is anticipated that substantial depletion credits will be available to the Company when the new "earned depletion" concept becomes fully operative in 1977,

the new system will likely have the eventual effect of further increasing the Company's effective tax rate.

In addition, should the provincial governments decide to increase their tax rates to offset the additional tax abatement on mining profits to be allowed by the Federal government, the Company, along with the whole mining industry, could ultimately face an unprecedented and discriminatory level of taxation, compared with that accorded other industries. This would inevitably discourage the expansion of current mining activities and investment in new projects in Canada.

#### **Ore reserves**

Flin Flon - Snow Lake area: Proven reserves of copper-zinc ore in the Company's mines at year-end totalled 18,344,900 tons, assaying Au, 0.04 oz. per ton; Ag, 0.6 oz. per ton; Cu, 2.9%; and Zn, 3.3%. Ore reserves at the end of 1970 totalled 19,115,100 tons.

South Saskatchewan area: Proven reserves of potash ore at the Company's Sylvite of Canada division, near Rocanville, totalled 312,531,430 tons at year-end.

Yukon area: Unexpected underground mining problems have been encountered at the Wellgreen property of Hudson-Yukon Mining Co., Limited at Quill Creek, 202 miles northwest of Whitehorse. The orebody is not as regular as was thought following earlier development work. The indicated ore reserves now total 626,430 tons, compared with reserves of 737,600 tons at year-end 1970. The grade of the reserves, however, remains unchanged at Ni, 2.04% and Cu, 1.42%. The Company owns 95.5% of the outstanding shares of Hudson-Yukon.

#### **Prices**

Reduced industrial activity in 1971 resulted in rising inventories of copper as demand lagged behind production. This oversupply situation, which first became noticeable in the last half of 1970, depressed the price of copper on the London Metal Exchange to 44.68¢ (Can.) per lb., the lowest since 1967.

At the beginning of 1971 the LME copper price was 47.52¢ (Can.) per lb. By April 1 the price had strengthened to 59.20¢ (Can.) per lb. but it soon

declined steadily and on November 22 slipped to 44.68¢ (Can.) per lb.

The price of zinc during 1971 increased appreciably as available zinc stocks declined after several major U.S. producers permanently closed their operations. At the start of the year both the Canadian and U.S. base price of zinc was 15¢ per lb., increasing in May to 16¢ with a further increase to 17¢ in July. Similar price increases occurred in Britain where the producers' price at the start of the year was 14.04¢ (Can.) per lb. and by June had reached 16.08¢ (Can.) per lb.

The demand for cadmium decreased during 1971 and resulted in higher producers' stocks and a subsequent price reduction. The price of \$2.35 (Can.) per lb. at the beginning of the year was maintained until July 28 when the price was reduced to \$1.50 (Can.) per lb. where it remained for the balance of the year. During this low-price period, the Company sold less cadmium because it decided not to match the substantial price discounts offered by competing producers.

The price of gold in London at the beginning of the year was \$37.63 (Can.) per oz. However, despite many price fluctuations during the year the price at year-end had risen to \$43.72 (Can.).

The Handy and Harman price for silver was \$1.66 (Can.) per oz. at the start of the year and declined gradually to \$1.39 (Can.) by year-end.

## Markets

During the period of the strike the Company was able to supply its customers with their copper and zinc requirements by making arrangements for delivery from other sources. The traditional geographic distribution of copper and zinc sales was resumed following the end of the strike: copper — domestic, 31%; overseas — 69%; zinc — domestic, 39%; U.S., 25%; overseas, 36%.

Sales of potash were distributed geographically as follows: domestic, 5%; U.S., 60%; overseas, 35%.

## Labor relations

On January 27, the 650 members of the Association of Flin Flon Trade Unions, which represents seven of the nine unions at Flin Flon, went on strike. In late 1970 the Association, representing machinists,

electricians, boilermakers, carpenters, painters and bricklayers, rejected the Company's offer of wage increases totalling about 30% over a three-year period, plus additional fringe benefits. (A similar offer had been accepted on September 11, 1970, by the 1,600 members of the United Steelworkers of America and the International Union of Operating Engineers.) Attempts by a federally appointed conciliation board at the end of 1970 to resolve the dispute were unsuccessful. The strikers set up picket lines and the Company was forced to lay off 1,600 members of the United Steelworkers of America and the International Union of Operating Engineers.

Early in May, 1971, negotiations between the Company and the strikers began to make progress and the men returned to work on June 21 after a new agreement had been reached.

The monetary items in the agreement are similar to those agreed to by the Steelworkers and Operating Engineers. The major changes in the agreement are the inclusion of the Rand Formula for hourly-rated employees, welfare plans are to be part of the collective bargaining agreement, and numerous alterations were made in the wording of the agreement.

It was also agreed that the nine unions and the Company would set up a joint negotiating committee to discuss the welfare plans. In addition, a Pension Plan Study Committee, comprising union and Company representatives, has scheduled a number of meetings in 1972 and will recommend appropriate changes in the pension plan.

The contracts with the Steelworkers and the Trade Unions expire on September 30, 1973.

## Shareholders

On December 31 the number of shareholders of record was 15,476, compared with 16,077 on December 31, 1970. There were 11,822 shareholders of Canadian registry, holding 84% of the outstanding shares.

## Directors

W. A. Morrice, formerly an Executive Vice-President of the Company, was elected to the Board of Directors at the Annual Meeting held in Toronto on

April 30, 1971. He succeeded George M. Francis, of West Engelwood, N.J., who did not stand for re-election. Mr. Francis had been a Director since 1947 and his 24 years of service are deeply appreciated.

H. R. Fraser, a director of Charter Consolidated Limited, of London, England, was appointed to the Board of Directors on March 16, 1971. His appointment filled the vacancy created by the death on March 2, 1971, of C. W. Engelhard who had been a Director since 1962. Mr. Engelhard's invaluable contributions to the decisions of the Board are greatly missed.

#### **Executive appointments**

W. A. Morrice was appointed President of the Company on September 18, 1971. He succeeded Eric S. Austin who retired on September 17 after 38 years of service but remains on the Board of Directors. Mr. Austin had been President since 1966 and has been a Director since 1961. Under his direction the Company made important progress in the diversification of its interests and it is fortunate that his wise counsel will remain at the disposal of the Board.

The following executive appointments and changes in responsibilities became effective September 18:

H. A. McKenzie continues as Executive Vice-President and is now responsible for directing all mining and industrial operations as well as development projects.

Joseph S. Warick was appointed Vice-President — Mining. He had been general manager of Sylvite of Canada, the Company's potash division, since July, 1967.

John L. Carpenter was appointed a Vice-President and given new responsibilities in addition to those he has as the Company's Secretary and General Counsel.

#### **Outlook**

In the Flin Flon area it is planned to bring two new mines into production in the last half of 1972, the White Lake and Ghost Lake Mines. The White Lake Mine is expected to begin production in August, when the Flexar Mine will be mined out. The addi-

tion of the two new mines will increase to nine the number of producing mines in the Flin Flon-Snow Lake area.

The Wellgreen Mine in the Yukon was scheduled to begin production in January, 1972, but, as announced in the press, the startup of operations was postponed until mid-1972. Underground development of the property has shown the orebody to be unexpectedly irregular and ground conditions to be sufficiently unfavorable as to require a different mining approach to that originally planned. As matters stand at present and in view of existing market conditions, the Wellgreen mine is unlikely to meet the original expectations.

During the year the Company participated with Anglo American Corporation of Canada Limited (Amcan) in refinancing New Imperial Mines Ltd., whose name was changed to Whitehorse Copper Mines Ltd. Production was suspended in June, 1971, and a shaft-sinking and development program is being undertaken on the Little Chief orebody, which will be brought into production early in 1973. The Company and Amcan will be conducting a joint exploration program on the Whitehorse properties north of the Little Chief orebody.

The Company's Sylvite of Canada division had a satisfactory year, considering that output was limited to approximately 42% of capacity by the Saskatchewan Government's prorationing regulations. Commercial production was started on March 1 and 464,010 tons of muriate of potash had been shipped by year-end. The highly efficient continuous mining method and automated refinery operation enabled the division to contribute positively to the Company's earnings and there is every indication the division will continue to operate at a profit even under difficult marketing conditions.

Francana Oil & Gas Ltd., in which the Company owns a 52.6% interest, continued to make progress. Reserves of both crude oil and natural gas have been increased substantially. Gross income is expected to increase by 15% during 1972 from properties developed and purchased during 1971. Francana is participating in a number of prospects that have interesting potential and retains significant holdings off the east coast of Canada and in the Arctic. In the latter area, Francana holds interests in 1,939,663 permit acres, including 88,824

acres through three permit blocks on Ellesmere Island. One permit block covers 22,482 acres, the western border of which is less than two miles to the east of Panarctic Oils Limited's Romulus C-42 well, the location of an interesting oil discovery announced on February 24. The discovery was made at a depth of 3,425 ft. in a hole intended to be drilled to a depth of 12,000 ft. Francana's other two permit blocks cover 66,342 acres to the north of Romulus C-42. Under farmout agreements with Francana, Panarctic has exercised all its options on all of Francana's acreage in the Arctic, giving Francana a 15% working interest in 1,779,247 acres, including its acreage on Ellesmere Island.

As reported last year, the Company has been working towards an increase in copper production and significant improvements have been achieved in smelter operations. This was brought about by converting the reverberatory furnace from coal to oil firing and using a higher-quality flux. It is not considered advisable at this time to increase the output of blister copper from our own ore resources beyond 6%, but it will be possible to handle concentrates brought in from other companies either for our own account or on a toll basis. These concentrates are currently available because of reduced Japanese demand and will provide an economical additional load for the smelter as we continue to work to achieve a higher output from our own resources.

To counteract the adverse effect of rising costs, the Company has launched several intensive and extensive studies aimed at improving the efficiency and increasing the productivity of operations in the Flin Flon-Snow Lake area. These studies are described in greater detail in the review of the operations of the metals division.

Although efforts are being made to ensure that our operations are as efficient and effective as possible, the profitability of the Company remains directly related to fluctuations in the price of its two main products, copper and zinc. Prices for zinc have remained firm with some upward trend and it appears probable that this position will be maintained during 1972. Copper, on the other hand, has suffered a fairly weak market but perhaps not as weak as might have been predicted a year ago or might be expected in the light of the high level of

stocks on the London Metal Exchange. Nor is the market as weak as some estimates of oversupply for the next two or three years would appear to dictate. This gives reason to believe that the underlying position is relatively strong and there are several factors that encourage this view. The level of physical metal stocks on the LME used to be regarded as the touchstone of demand and supply but it is probably more true today to see the stocks as a means whereby European consumers are financing their own inventories. The very low stocks of consumers in Europe read in conjunction with the high LME stocks paint a picture that is not abnormal. At the same time, from a supply point of view, it is clear that the more optimistic estimates of production increases that were made in the late 1960's are not being fulfilled and there are also problems of operating to existing capacity, particularly in South America. In other areas, notably the United States and Japan, the focus on environmental problems has placed a severe burden on smelter operations which, apart from any question of increased production, is hampering current operations.

Under all circumstances, it seems reasonable to expect that copper will reassert itself during 1972 though a sustained improvement in prices must inevitably depend to a great extent on whether there is any real improvement in the North American economy.

#### Appreciation

On behalf of the Board we wish to express appreciation for the loyal services of a great number of employees during a difficult year.

On behalf of the Board of Directors



Chairman



President

March 20, 1972

# Consolidated statement of financial position

as at December 31, 1971

The accompanying notes are an integral part of the financial statements.

Hudson Bay Mining  
and Smelting Co., Limited  
and subsidiary  
companies

1971

1970

## Current assets

Cash	\$ 362,043	\$ 344,744
Short-term securities — at cost	14,070,000	9,168,543
Accounts receivable	11,084,565	10,427,234
Income taxes recoverable	—	3,265,494
Inventories (note 3)	21,755,088	15,010,418
Materials and supplies — at average cost	6,369,015	6,492,834
Total current assets	<u>53,640,711</u>	<u>44,709,267</u>

Deduct:

## Current liabilities

Accounts payable and accrued liabilities	10,530,563	12,761,808
Income and other taxes payable	843,554	—
Dividend payable	904,083	—
Current portion of long-term debt	576,000	—
Total current liabilities	<u>12,854,200</u>	<u>12,761,808</u>

## Working capital

Add:

## Marketable securities — at cost

(Market value 1971 — \$1,953,594; 1970 — \$2,061,328)	<u>2,541,190</u>	<u>2,541,190</u>
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## Investments in other companies — at cost

Quoted (Market value 1971 — \$1,439,421; 1970 — \$2,608,080)	3,564,269	3,564,269
Unquoted	<u>15,281,390</u>	<u>13,672,745</u>

## Less provision for future write-offs

18,845,659	17,237,014
7,991,850	7,179,350

## Property, plant and equipment (note 4)

## Other assets

Unamortized mine development expenditures (note 5)	42,688,375	39,977,018
Sundry assets and deferred charges — at cost	<u>5,541,520</u>	<u>4,712,660</u>

48,229,895	44,689,678
<u>202,802,533</u>	<u>178,716,381</u>

## Capital employed

Deduct:		
Long-term debt (note 6)	28,354,000	—
Deferred income taxes (note 7)	19,987,000	22,796,000
Minority interests in subsidiaries	6,021,912	5,969,320

## Shareholders' investment

### Investment evidenced by:

Capital stock (note 8)	
Authorized — 12,000,000 shares of no par value	
Issued and fully paid — 9,040,833 shares	

Retained earnings	
Total shareholders' equity	<u>\$ 148,439,621</u>

\$ 45,925,526  
102,514,095

\$ 45,925,526  
104,025,535

\$ 148,439,621

\$ 149,951,061

Approved by the Board of Directors  
Director: Gavin W. H. Relly  
Director: W. A. Morrice

# Consolidated statement of earnings

for the year ended  
December 31, 1971

**Hudson Bay Mining  
and Smelting Co., Limited  
and subsidiary  
companies**

**1971**

**1970**

The accompanying notes  
are an integral part of the  
financial statements.

## Revenue

Sales of product	\$ 60,606,500	\$ 86,029,681
Less freight, refining and selling expenses	6,946,619	8,241,495
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	53,659,881	77,788,186
Sales of power and tolls from treatment of custom concentrates	1,078,420	1,131,289
Income from investments	989,241	1,063,660
Other income	80,602	701,539
	<hr/>	<hr/>
	55,808,144	80,684,674

## Costs and expenses

Production costs (note 10)	37,801,452	39,903,293
Amortization of mine development expenses	3,796,088	4,502,934
Depreciation and depletion	4,559,887	2,834,071
Provincial mining taxes	125,858	1,788,973
Exploration expenses	3,045,171	3,062,120
General administrative expenses	2,303,833	2,107,956
Interest and other long-term debt expense	1,272,819	—
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	52,905,108	54,199,347

## Income taxes (note 7)

Earnings from operations	4,233,036	20,332,327
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## Other deductions (income)

Provision for future write-offs of investments	812,500	565,618
Gain on sale of investments	—	(460,820)

## Net earnings before deducting minority interests

### Minority interests in earnings of subsidiaries

## Net earnings for the year

## Earnings per share

\$ 3,008,977	\$ 19,563,052
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## Retained earnings at beginning of the year

Add net earnings for the year	3,008,977	19,563,052
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	107,034,512	114,723,769

## Deduct dividends —

50¢ per share (1970 — \$1.18½)	4,520,417	10,698,234
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## Retained earnings at end of the year

\$ 102,514,095	\$ 104,025,535
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# Consolidated statement of retained earnings

# Consolidated statement of source and application of funds

for the year ended December 31, 1971

The accompanying notes are an integral part of the financial statements.

**Hudson Bay Mining and Smelting Co., Limited and subsidiary companies**

**1971**

**1970**

## Source of funds

### Operations:

Earnings from operations	\$ 4,233,036	\$ 20,332,327
Depreciation, depletion and amortization of mine development expenditures	8,355,975	7,337,005
Deferred income taxes	(2,809,000)	7,913,000
	9,780,011	35,582,332
Proceeds from long-term debt	29,000,000	—
Public issue of shares by subsidiary company	—	3,220,000
Sales of marketable securities	—	3,696,642
Issue of shares under options	—	5,415
	38,780,011	42,504,389

## Application of funds

Dividends	4,520,417	10,698,234
Investments in other companies	1,608,645	358,357
Additions (net) to property, plant and equipment	15,470,625	25,880,021
Mine development expenditures	6,507,445	8,780,153
Reduction of long-term debt	646,000	—
Decrease in minority interests	358,967	776,251
Increase (net) in sundry assets	828,860	(346,585)
Marketable securities purchased	—	184,367
	29,940,959	46,330,798
<b>Increase (decrease) in working capital</b>	<b>8,839,052</b>	<b>(3,826,409)</b>
<b>Working capital at beginning of the year</b>	<b>31,947,459</b>	<b>35,773,868</b>
<b>Working capital at end of the year</b>	<b>\$ 40,786,511</b>	<b>\$ 31,947,459</b>

## Auditors' report

To the shareholders of Hudson Bay Mining and Smelting Co., Limited:

We have examined the consolidated statement of financial position of Hudson Bay Mining and Smelting Co., Limited and subsidiary companies as at December 31, 1971, and the consolidated statements of earnings, retained earnings and source and application of funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and

accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion these consolidated financial statements present fairly the financial position of the companies as at December 31, 1971, and the results of their operations and the source and application of their funds for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Deloitte, Haskins & Sells  
Chartered Accountants.

Toronto, Canada, February 18, 1972.

# Notes to the consolidated financial statements

December 31, 1971

## Hudson Bay Mining and Smelting Co., Limited and subsidiary companies

### 1. Principles of consolidation

The consolidated financial statements include the accounts of Hudson Bay Mining and Smelting Co., Limited and all its subsidiaries.

### 2. Foreign exchange

Foreign currencies have been translated to Canadian dollars as follows: revenue and expenditure, non-current assets and liabilities at rates in effect at dates of transactions; current assets and liabilities at rates in effect at the end of the year.

### 3. Inventories

Inventories at December 31 comprise the following:

	1971	1970
Metals, at estimated sales value	\$14,877,534	\$12,707,054
Metals in process, at cost	1,648,181	1,268,611
Manufactured and other products (finished, in process and raw materials), at cost or net realizable value, whichever is the lower	<u>5,229,373</u>	<u>1,034,753</u>
	<u>\$21,755,088</u>	<u>\$15,010,418</u>

### 4. Property, plant and equipment

(a) The following is a summary of property, plant and equipment at cost by major category:

	1971	1970
Mineral properties	\$22,555,867	\$22,312,917
Base-metal plant and equipment	82,716,577	77,102,164
Industrial mineral plant and equipment	43,971,643	41,131,293
Oil and gas properties, plant and equipment	22,333,483	15,747,980
Other property, plant and equipment	<u>7,735,764</u>	<u>7,573,313</u>
Total cost	<u>179,313,334</u>	<u>163,867,667</u>
Less accumulated depreciation and depletion	<u>78,922,206</u>	<u>74,387,277</u>
	<u>\$100,391,128</u>	<u>\$89,480,390</u>

Mineral properties include all exploration costs with respect to mines presently operating or in the development stage. Oil and gas properties are accounted for on the full cost basis whereby all costs relating to the exploration for and development of oil and gas resources are capitalized whether productive or unproductive.

(b) Depreciation of base-metal plant and equipment and depletion of mineral and oil and gas properties are charged to operations on a unit of production basis based on estimated recoverable reserves. Depreciation on industrial mineral and other plant and equipment is charged to operations on a straight-line basis based on the estimated useful lives of the plant and equipment.

### 5. Amortization of mine development expenditures

Mine development expenditures are charged to operations on a unit of production basis based on estimated recoverable reserves.

### 6. Long-term debt

(a) During 1971 the Company issued \$25,000,000 in unsecured 9% debentures maturing June 15, 1991. Under the trust indenture sinking-fund payments sufficient to retire \$800,000 of principal amount per year from 1977 to 1990 inclusive are required. The Company has the

option to redeem the debentures at prices ranging downward from 109% currently to 100% in 1989 and thereafter. Debentures redeemed through the operations of the sinking-fund are callable at par.

(b) During 1971 a subsidiary company, Francana Oil & Gas Ltd., obtained bank production loans of \$4,000,000 which are repayable in monthly instalments of \$48,000, plus interest at rates approximating prime bank rate. The loans are secured by an assignment of the subsidiary's interest in certain producing properties.

### 7. Deferred income taxes

Deferred income taxes represent tax reductions applicable to future years for expenditures on mine development, mineral and oil and gas properties, cost of participation in certain mining companies, and depreciation claimed in the determination of taxable income but not charged to earnings. The reduction in deferred income taxes in the current year is the result of an income tax loss to be applied against future income.

### 8. Share option plan

The Company's Share Option Plan for Full Time Officers and Key Employees provides for the granting of options on 168,000 unissued shares at prices not less than 95% of the market value (full market value in the case of United States citizens) on the day the option is granted. As of December 31, 1971, options on 600 shares granted in 1968, and 47,400 shares (officers 10,500 shares) granted in 1970 were outstanding and 38,325 were available for future grants. The options expire five years from the date of granting. No options were granted or exercised during 1971, and options on 5,325 shares were terminated.

### 9. Guarantees and commitments

At December 31, 1971, guarantees and commitments are estimated at \$2.7 million.

### 10. Production costs

Production costs for 1971 include certain continuing costs incurred during the strike at the Flin Flon and Snow Lake operations from January 27 to June 21.

### 11. Remuneration of directors, officers

The Company has 10 directors and 11 officers; two of the officers are also directors. The aggregate remuneration paid to the directors and officers as such was as follows:

	1971	1970
Directors	\$ 30,733	\$ 27,000
Officers	<u>\$585,291</u>	<u>\$521,000</u>

# Ten-year record

1962-1971

## production

year	copper (tons)	zinc (tons)	cadmium (lbs.)	gold (ozs.)	silver (ozs.)	selenium (lbs.)
1962	37,023	80,766	317,495	85,552	1,185,596	76,740
1963	37,301	79,596	316,050	83,878	1,167,160	77,429
1964	40,417	71,012	329,552	80,174	1,179,888	70,335
1965	39,726	71,435	368,208	82,189	1,215,359	62,061
1966	38,268	73,331	352,405	71,202	1,022,009	76,602
1967	38,403	72,061	352,042	70,615	1,040,098	63,316
1968	41,660	80,308	330,872	59,602	970,674	86,346
1969	42,302	79,711	333,959	52,410	818,209	91,866
1970	42,178	78,622	338,343	55,188	865,141	89,808
1971	26,988	41,158	145,857	27,635	504,021	61,872

## earnings and dividends

year	operating revenue	investment, other income	net earnings	earnings per share	dividends	dividends per share
1962	\$49,396,811	\$1,040,677	\$11,302,305	\$1.37	\$ 8,273,919	\$1.00
1963	51,224,671	1,252,771	11,737,063	1.42	8,963,412	1.08½
1964	56,377,535	1,435,381	13,095,323	1.58	9,652,905	1.16½
1965	61,702,298	1,486,058	15,990,045	1.93	10,342,399	1.25
1966	69,112,153	1,454,342	19,116,388	2.31	11,169,791	1.35
1967	72,351,946	1,612,232	16,718,617	1.98	10,999,845	1.30
1968	79,699,926	1,965,946	21,134,880	2.47	11,551,067	1.33½
1969	95,674,349	2,238,424	29,698,514	3.29	13,252,815	1.46½
1970	87,160,970	1,765,199	19,563,052	2.16	10,698,234	1.18½
1971	61,684,920	1,069,843	3,008,977	0.33	4,520,417	0.50

## ore milled and ore reserves

year	milled (tons)	reserves (tons)	copper	zinc	gold (oz./ton)	silver (oz./ton)
1962	1,702,000	14,934,000	2.8%	4.9%	0.06	0.9
1963	1,619,000	15,115,500	2.9	4.7	0.05	0.8
1964	1,585,000	16,627,400	3.0	4.3	0.05	0.8
1965	1,640,000	16,842,400	3.0	4.5	0.05	0.8
1966	1,690,000	16,765,300	2.9	4.4	0.04	0.7
1967	1,588,000	16,884,600	3.0	4.1	0.04	0.7
1968	1,610,000	17,612,300	3.0	3.8	0.04	0.6
1969	1,702,000	18,048,600	3.0	3.5	0.04	0.6
1970	1,709,000	19,115,100	2.9	3.3	0.04	0.6
1971	1,084,000	18,344,900	2.9	3.3	0.04	0.6

**Hudson Bay Mining's metallurgical and mining complex** at Flin Flon, Manitoba, began operations in 1930. Ore from the Company's mines outside of Flin Flon is either trucked or railed to Flin Flon. In the foreground is the headframe of the South Main Shaft of the original Flin Flon Mine; the North Main Shaft headframe is near the metallurgical plants.



# Properties, subsidiary companies and major holdings



# Location maps

wholly or partly owned Canadian properties of Hudson Bay Mining and Smelting Co., Limited

## Map of Canada

- 1 Hudson-Yukon Mining Co. Limited
- 2 Stikine Copper Limited
- 3 Baffinland Iron Mines Limited
- 4 Churchill River Power Company Limited
- 5 Francana Minerals Ltd.
- 6 Francana Oil & Gas Ltd.
- 7 Sodium Sulphate (Saskatchewan) Ltd.
- 8 Sylvite of Canada
- 9 Manitoba Chromium Limited
- 10 Hudson Bay Diecastings Limited
- 11 Zinc Oxide Company of Canada Limited
- 12 Durham Industries (Canada) Ltd.

## Map of Flin Flon / Snow Lake Area

- a Centennial Mine
- b Flin Flon Mine
- c White Lake Mine
- d Schist Lake Mine
- e Flexar Mine
- f Wim Mine
- g Anderson Lake Mine
- h Chisel Lake Mine
- i Dickstone Mine
- j Ghost Lake Mine
- k Stall Lake Mine
- l Osborne Lake Mine



SASK.  
MAN.

CNR

Sherridon  
CNR

Snow Lake  
f  
g  
h  
i  
j  
k  
l

CNR  
Thompson Road  
Wekusko





Many areas in the Yukon that are being investigated by Hudson Bay Mining's exploration crews are accessible only by helicopter. The six-plane fleet of Hudson Bay Air Transport Limited, a wholly owned subsidiary of the Company, logged 2,354 flying hours, or 258,990 miles, during 1971 in support of exploration programs in Canada. Shown below is part of the campsite at the Wellgreen Mine at Quill Creek in the Yukon.



# Review of operations

## Metals division

The production figures in the review of operations of the metals division are the results of only seven months of full operations because the Company's base-metal mines and metallurgical plants in the Flin Flon-Snow Lake area in northern Manitoba were shut down by the strike that began on January 27 and ended on June 21. Full production was resumed in July.

### Production

Metal production during 1971 was as follows: refined copper, 53,975,068 lbs.; slab zinc, 82,316,529 lbs.; cadmium, 145,857 lbs.; selenium, 61,872 lbs.; gold, 27,635 ozs.; and silver, 504,021 ozs.

Also produced and sold were 366 tons of lead concentrates containing 102 ozs. of gold, 11,687 ozs. of silver, and 475,195 lbs. of lead.

### Producing mines

Ore mined from the eight producing mines in the Flin Flon - Snow Lake area during the year totalled 1,082,700 tons, a decrease of 626,800 tons from the tonnage mined in 1970. Ore, with average assays, produced by each mine:

mine	tons	average assays				
		Au oz./ton	Ag oz./ton	Cu %	Zn %	Pb %
Flin Flon	272,300	0.06	0.8	2.0	3.5	—
Anderson	224,400	0.02	0.3	4.2	—	—
Chisel	163,200	0.04	0.9	1.0	8.4	0.3
Osborne	153,900	—	—	3.5	1.2	—
Dickstone	140,800	0.02	0.4	2.0	4.8	—
Flexar	66,300	0.04	0.2	3.7	0.4	—
Schist	50,100	0.02	0.7	4.7	5.0	—
Stall	11,700	0.16	0.5	5.8	1.6	—

Pillars and remnants continued to be the main sources of ore in the Flin Flon Mine and provided 91% of its production.

Production from the Anderson Lake Mine was slightly higher than forecasted because the mine operated seven days per week in the last quarter of 1971.

The Chisel Lake Mine produced as scheduled although it was necessary to mine some lower-grade stopes.

A long drift was driven on the 2,100-ft. level in the Osborne Lake Mine to explore the downward extension of the orebody. Diamond-drilling indicated the ore extended at least 300 ft. below the level.

Most of the ore mined in the Dickstone Mine came from the No. 2 ore zone. Some ore was taken from the stockpile.

At the Schist Lake Mine, development of the south-end orebodies, down to the 3,500-ft. level, was continued. Exploration diamond-drilling failed to outline any additional ore zones.

Development of the internal shaft was continued from the 2,850-ft. level in the Stall Lake Mine. This will open up five new working levels and allow deeper exploration, but ore production will be reduced while this work is in progress. The 1,950-ft. level exploration drift was driven more than 5,000 ft. and is nearly completed. Exploration drilling was started.

Production from the Flexar Mine was as planned.

### Mines under development

The production shaft at the White Lake Mine was completed at 1,373 ft. below the collar. All equipment was installed. The development of six main levels was nearly completed and stope development was started. Production is expected to begin in August, 1972.

The decline at the Ghost Lake Mine reached the ore zone at the expected horizon. In addition to continuing the decline, stope development was started. Startup of production is scheduled for the last half of 1972.

At the Wellgreen Mine in the Yukon, the concentrator, campsite and all mining facilities were completed during the year. However, startup of production was postponed from January, 1972, until mid-1972, because of unexpected underground mining difficulties. The orebody is more irregular than indicated by earlier development work and ground conditions are poorer than anticipated. As a result, additional development work is required, as well as a change in the mining method.

## Exploration

Hudson Bay Exploration and Development Company Limited carried out exploration on its own behalf in Manitoba and Saskatchewan, and jointly with Anglo American Corporation of Canada Limited in the Yukon, British Columbia, Ontario and Quebec. Diamond-drilling on all Canadian projects totalled 185,310 ft. and 428 geophysical anomalies were tested.

On the Reed Lake zone, 54 miles east of Flin Flon, drilling completed in 1971 increased the reserves to an estimated 1,142,000 tons grading 2.18% copper. The zone has been explored to a depth of 1,375 ft. and it is open at depth.

On the Company's Tom Claims in the Yukon, deep drilling from a crosscut driven 300 ft. westerly indicated that the west zone is open at depth with an apparent increase in width. The higher-grade portions of east and west zones are now estimated to contain 8,645,000 tons grading 2.75 oz. silver, 8.4% zinc and 8.1% lead. Further exploration and development of this remote deposit will be resumed when economic conditions are more favorable.

Options were taken by the Company on five properties during 1971. At year-end, 11 options continued in good standing. Company personnel manage and direct work on all options. In addition to the options, the Company holds 2,462 claims, 218,707 acres in claim blocks and mineral reservations, and one prospecting permit totalling 245.16 square miles.

Hudson Bay Air Transport Limited, a wholly owned subsidiary of the Company, flew 2,354 hours, or 258,990 miles, largely in support of exploration programs.

## Concentrator

The X-ray analyzer and process computer programs have been broadened and reagent additions to certain critical areas of flotation are now controlled automatically.

The concentrator treated 1,084,000 tons of ore during 1971, which was 625,000 tons less than in the previous year. Of the total tonnage treated, Flin Flon Mine contributed 24.14%; Anderson Lake

Mine, 20.72%; Chisel Lake Mine, 15.08%; Osborne Lake Mine, 14.22%; Dickstone Mine, 13.01%; Flexar Mine, 6.13%; Schist Lake Mine, 4.62%; and Stall Lake Mine, 1.08%.

Ore treated and the average assays:

	1971	1970
tons of ore	1,084,000	1,709,000
average tons per day	4,930	4,680
Au — oz. per ton	0.03	0.04
Ag — oz. per ton	0.5	0.6
Cu — %	2.8	2.7
Zn — %	3.2	3.9
Pb — %	0.2	0.2

The following concentrates were produced from ore treated:

concentrates	tons	assays				
		Au oz./ton	Ag oz./ton	Cu %	Zn %	Pb %
copper	173,000	0.12	2.0	16.4	4.4	0.3
zinc	45,900	0.04	0.9	0.9	47.9	0.3
lead	332	0.29	30.9	0.6	3.7	61.9

A total of 864,800 tons of flotation tailings was produced during the year. Of this amount, 381,200 tons were treated for partial recovery of gold and silver in the cyanide section.

A total of 823,300 tons of tailings was stockpiled and the balance used as mine backfill.

The total tonnage and approximate assays of tailings stockpiled to date are as follows:

tons	assays					
	Au oz./ton	Ag oz./ton	Cu %	Zn %	S %	Fe %
50,596,800	0.02	0.3	0.2	0.8	23.4	26.7

## Zinc refinery

A total of 82,316,529 lbs. of zinc was produced in 1971. This was 47.65% less than the 1970 production of 157,243,095 lbs. Several grades of zinc were produced. The Special High Grade brand for the diecasting industry was 99.9973% pure zinc.

Cadmium production totalled 145,857 lbs., compared with 338,343 lbs. in 1970.

The following materials were treated:

	tons	assays			
		Au oz./ton	Ag oz./ton	Zn %	Cu %
HBMS concentrates	45,271	.04	0.9	47.9	0.9
oxide	23,045	—	0.5	61.8	0.7
purchased concentrates	28,159	—	1.8	52.7	0.9

Production of sulphide residue totalled 27,580 tons, of which 26,944 tons were delivered to the smelter. The remainder was stockpiled. Oxide residue produced and stockpiled totalled 6,054 tons. Inventory at year-end was 151,317 tons of sulphide residue and 264,044 tons of oxide residue.

#### Copper smelter

The tonnages and assays of the materials which were treated in the smelter during 1971 are shown below:

	tons	assays			
		Au oz./ton	Ag oz./ton	Cu %	Zn %
HBMS concentrates	173,827	0.12	2.0	16.4	4.4
residues, etc.	41,175	0.14	3.8	2.9	25.1
custom concentrates	19,107	—	—	—	—

The tonnage and metal content of blister copper produced for the Company's account and for shipment to the refinery were as follows:

tons	Au-oz.	Ag-oz.	Cu-lbs.	Se-lbs.
27,424	28,189	509,474	54,289,643	91,247

Zinc oxide recovered from the smelter totalled 3,237 tons, assaying 31.0% zinc, 3.9% copper, 2.5% cadmium, 12.1% lead. This material was sent to the zinc refinery for treatment.

Slag treated in the fuming furnaces totalled 206,100 tons, yielding 19,808 tons of oxide. This oxide, containing 26,498,300 lbs. of zinc, was delivered to the zinc refinery for processing into slab zinc.

During the summer the reverberatory furnace was converted to use heavy oil instead of coal as fuel. This conversion, combined with the use of high-grade silica sand as a reverberatory flux, has resulted in improved furnace operation and increased smelter output.

#### Research

Laboratory tests of the adaptability of the Sherritt Gordon pressure-leach process to Hudson Bay Mining's zinc concentrates continued throughout the year but results to date indicate more research is needed before a conclusion can be reached. Additional work will be conducted in 1972.

Environmental studies included surveys of lakes in the Flin Flon-Snow Lake areas, installation of additional sulphur dioxide monitors and construction of a pilot plant for the removal of metallic ions from Schist Lake Mine water.

Increased use of atomic absorption enabled the determination of low metallic ion concentrations required for environmental control and exploration soil samples.

Automated process control studies conducted jointly by the concentrator and research departments emphasized the determination of control parameters for hydrocyclones.

Experiments were continued throughout the year on test plots of mine tailings to determine whether the sterile tailings, after the addition of fertilizers and other chemicals, would sustain plant life. The objective of the program is to reduce the dust from the dry tailings by growing suitable vegetation in the disposal area.

#### Power supply

Churchill River Power Company Limited, a wholly owned subsidiary, and the Company's thermal plant in Flin Flon generated 495,057,400 kilowatt hours in 1971, a reduction of 223,601,600 kilowatt hours from output in 1970.

Precipitation in the western watershed was slightly above normal in 1971; in the northern watershed it was well above normal. This, coupled with the fact that the total generated energy was lower than normal, permitted the storage of sufficient water in Reindeer Lake to fill the reservoir before the beginning of winter.

Power distribution was extended to the Ghost Lake Mine. Two hundred towers were rebuilt on the 110-KV transmission line to Snow Lake without power interruption because a line crew has been

specially trained in the techniques of live-line maintenance.

An 8,000-ampere silicon rectifier unit replaced an obsolete mercury arc unit at the substation.

#### **Personnel and administration**

A number of steps were taken during the year to increase the efficiency and improve the productivity of operations. The first one was the establishment of three new senior management positions to redistribute authority and responsibilities on a more effective basis: manager — mining; manager — plant services, and manager — metallurgy. These positions were filled by experienced and capable personnel from within the Company.

A Plant Upgrading Committee consisting of four members from Flin Flon and two from Head Office has been formed. This Committee has been actively studying present operations and recommendations for a five-year plan of operating improvements are to be submitted to management at Head Office in April, 1972.

Current maintenance procedures are being reviewed and it is intended to introduce a planned maintenance program to improve equipment performance and reduce costs. It is anticipated that these new programs will result in considerable savings, especially in the area of manpower requirements.

In an effort to achieve further cost reductions, an industrial engineering study of the operating plants will be carried out with emphasis on productivity and utilization of manpower.

During 1971 the Computer Services Department, established in 1969 and located in the main administration building in Flin Flon, was brought under the operational and administrative control of Head Office. The objectives of this department are ultimately to provide data-processing services to all the divisions and subsidiaries of the Company.

At present the Company uses the time-sharing capabilities of its computer to service the Sylvite division at Rocanville, Sask., through use of on-line terminal equipment. The information processed in this manner forms the basis for the complete management information system at the potash mine and refinery.

The Flin Flon division uses the services extensively for its accounting systems on a batch-processing basis and is now investigating the feasibility of using the time-sharing capabilities of the equipment for such things as engineering and environmental studies, inventory enquiries, etc.

The number of employees on the payroll at Flin Flon and Snow Lake at year-end was 2,725, a decrease of 50 from the previous year; 605 employees are members of the 25-Year Club.

**The Flexar Mine** is located at Birch Lake in north-eastern Saskatchewan, approximately 8½ miles southwest of Flin Flon, Manitoba.



**Sylvite of Canada** has two four-rotor mining machines, each one capable of cutting 12 tons of potash ore as it advances 1 ft. per minute. Ore is dumped onto an extensible conveyor (lower left) that can be lengthened to a maximum of 4,000 ft. by adding 400-ft. sections of belting. The maintenance room (lower right) leads off from the bottom of the service shaft.



## Review of operations

# Potash division

### Sylvite of Canada



Commercial production began on March 1 following the successful completion of the tune-up phase, which was started in late 1970. By year-end 1971 these results had been achieved: ore mined, 1,484,368 tons; ore milled, 1,468,570 tons; muriate of potash produced, 501,826 tons; product shipped, 464,010 tons in 4,916 railway covered hopper cars.

During the year, markets for muriate of potash were developed in Canada, the U.S. and overseas. Canadian sales were handled by Sylvite's own sales staff; sales to U.S. customers were arranged by a U.S. marketing agency and overseas sales were made through an international sales agency. Overseas customers were India, Brazil, Korea and the Philippines.

Mining and refining operations in the first year of production exceeded their targets and both total production costs and unit costs were below budget. This high rate of efficiency and productivity reflected co-ordinated planning from the outset and the co-operation of every department. In addition, there were considerably fewer modifications and lower major maintenance costs than anticipated.

The production shaft and hoist were put into operation on January 16. The first of two four-rotor mining machines and its extensible conveyor also began operating on January 16; the second four-rotor machine and its extensible conveyor began cutting on October 2.

Capital expenditures during the year totalled \$2,918,460. The major portion was for the installation of permanent equipment and service facilities underground. Major capital projects on surface that were completed during the year were the product storage building, tailings booster station, reclaim brine system and two brine disposal wells. Work is still in progress on the service shaft headframe, facilities at the bottom of the shaft, the ventilation system, warehouse, main line and panel entry conveyors and the granular product screening circuit.

Waste brine from the refinery is being disposed of by pumping it into two deep wells; the brine ultimately moves into porous formations several thousand feet underground, well below the potash horizon. Sylvite's two disposal wells are capable of handling all excess brine from storage ponds. With-

out the disposal wells, it would be necessary to continue expanding the surface pond system, which is both costly and potentially dangerous because of the risk of polluting ground water.

At the beginning of 1971 Sylvite had a full complement of personnel and recruiting during the year was mainly to replace employees who had left for other employment. At year-end there were 176 employees on the payroll.

Familiarization training sessions were held for new employees and advanced classes were conducted for supervisory and management personnel. Training for operators and tradesmen was conducted through informal classes and on-the-job instruction. To assist employees in upgrading their knowledge of mathematics, arrangements for classes were made with Canada Manpower and the Saskatchewan Department of Education.

First-aid training was given to 109 employees; 33 men have been trained in mine rescue techniques. Two new teams have started training under the guidance of an official of the Saskatchewan Department of Natural Resources.

There was considerable public interest in the mine and refinery during the year and by year-end approximately 3,000 persons had toured both facilities. The daily flow of visitors set a record on May 29 when 850 persons were guests on "Tour Day", a day-long program staged for employees, special guests and local residents in lieu of the traditional formal opening ceremonies.



**Drilling in Alberta** for Fran-cana Oil & Gas Ltd., the oil and gas wing of Hudson Bay Mining, under a farm-out agreement. Below, a pipeline crew is laying an oil flowline in Saskatchewan from a producing well to a central treating battery.



# Subsidiary and affiliated companies

### Francana Oil & Gas Ltd.



Sales of crude oil in 1971 increased slightly to 1,101,000 barrels. Sales of natural gas increased by 15% to 1.5 billion cubic feet. The comparable figures for 1970 are 1,003,000 barrels of oil and 1.3 billion cubic feet of gas.

Income from all sources increased by 5.6% from \$2,457,000 to \$2,594,000. Earnings, after provision for deferred taxes, were \$811,000, compared with \$904,000 in 1970. The decrease is largely attributable to increased depletion and depreciation charges. The Company, on September 30, 1971, redeemed out of capital 3,400 of the issued and outstanding 5% cumulative redeemable convertible preferred shares at the redemption price of \$100 per share.

Proven crude oil reserves at year-end were 15,420,000 barrels, an increase of 1,846,000 barrels after allowing for production during the year. Proven gas reserves at year-end were 73.9 billion cubic feet, 41 billion cubic feet more than at year-end 1970.

On November 1, 1971, the Company purchased all of Pioneer Exploration Ltd.'s natural gas and oil producers, reserves and undeveloped acreage in Canada for a cash price in excess of \$3,000,000 (Can.). This group of properties added approximately 500 barrels of oil and 1.5 million cubic feet of natural gas daily to Francana's production stream. Francana acquired a 27½% interest in a block of gas development acreage held by Camac Exploration Ltd. in the Huxley area of Alberta. This property was brought into production on November 1, 1971, and it is expected the pool will be unitized early in 1972. It will add approximately 1.7 million cubic feet daily to Francana's production.

The 1971 exploration and development program by the Company and Francana Exploration Inc., a wholly owned U.S. subsidiary, included participation in drilling 49 gross wells, equivalent to 14.4 net wells, which resulted in 3.2 net Francana oil producers, 2.8 net gas wells, 8.1 net dry holes and 0.3 service wells.

A continuing drilling program in the Viewfield area of Saskatchewan resulted in seven new oil producers during the year and the addition of 500,000

barrels of recoverable oil to Francana's reserve base. Two new development oil wells were completed in the Fort Gilbert Field in Montana. Casing was run to evaluate a substantial oil recovery encountered in a well in the Little Bow area of southern Alberta. Additional drilling is planned for 1972. Two wells drilled on the undeveloped acreage acquired from Pioneer resulted in oil completions.

Gas discoveries were made in the Cecil Lake area of northeast British Columbia and in the Saddle Lake area of east-central Alberta. Gas development continued in the Strome and Holmberg areas of eastern Alberta, resulting in the completion of five additional gas wells. It is expected the reserves developed in the area during the past two years will be brought into production during 1972.

Considerable interest was generated by an oil and gas discovery on Sable Island off the East Coast of Canada. Francana, late in the year, exercised options to acquire 1.8 million gross acres just off Cape Breton. Francana now holds a 12½% interest in 2,128,079 acres in this interesting area. The options were exercised on the basis of information obtained during two seasons of seismic shooting.

Activity in the Arctic Islands remained at a high level throughout the year and was further stimulated by \$75,000,000 of exploration capital provided to Panarctic Oils Limited by major utility companies in the U.S. Panarctic plans to start drilling its Romulus C-42 location on Ellesmere Island in early 1972. This location is less than two miles from Francana's acreage.

Francana, through its wholly owned U.S. subsidiary, increased from 8% to 22% its equity interest in Trend Exploration Limited, a Colorado-based company actively searching for hydrocarbons and minerals in Britain, Italy, Spain, Indonesia, Australia, U.S. and Canada. Trend has applied for exploration concessions in the North Sea and is participating in two land programs in Britain, in the Lancashire and Cheshire Basin areas. Trend was active in the State of New York during 1971 and was instrumental in the discovery of two gas-bearing reefs of Devonian age. In Indonesia, Trend has a 30% interest in a one-million-acre permit on land that is close to shore and considered prospective for reef production. A seismic program was initiated during 1971 and drilling is planned for 1972.

### Hudson Bay Diecastings Limited



Sales and profits in 1971 reached their highest level since the startup of operations in 1966 despite lagging sales in the automotive industry, the Company's major customer.

Competition for sales last year was keener than ever before but the benefits of the Company's modern automated operations became even more apparent as many older diecasting plants in Canada and the U.S. were unable to survive and were forced to shut down.

Slightly more tons of zinc were melted in 1971 than in 1970 but future increases are likely to be fractional because of the growing demand for lighter, thin-wall castings.

Although shipments of zinc and zinc alloy from Hudson Bay Mining, the parent company, were suspended during the five-month strike at the latter's operations in northern Manitoba, production of diecastings continued, using metals purchased from other suppliers.

Costs of raw materials, operating supplies and labor continue to rise. The current two-year labor contract covering plant employees expires on October 1, 1972, and negotiations for a new contract will start in September.

Although firm orders already booked for 1972 indicate a high level of production, current selling prices are the most competitive to date, consequently only a modest profit for 1972 is anticipated.

### Francana Minerals Ltd.



An increase of approximately 15% in the tonnage of sodium sulphate sold during 1971 was more than offset by depressed prices and increased operating costs, resulting in a small loss for the year's operations. The price of salt cake is expected to remain low throughout 1972.

Test samples of special coarse products were manufactured during the year, continuing experimental work begun in 1970. However, due to the uncertainty in the detergent industry in the U.S., sales of this grade did not develop as anticipated. The potential of this market cannot be evaluated until U.S. Government policy has been clarified. Sales of regular detergent-grade sodium sulphate to manufacturers increased significantly.

Many Canadian kraft pulp mills were closed for long periods during the year as their sales diminished, thus cancelling the additional market for sodium sulphate created by new mills and expansions coming into production.

### Zinc Oxide Company of Canada Limited



Although sales of both zinc oxide and zinc dust in 1971 were the highest since 1965, the year the Company became a wholly owned subsidiary of Hudson Bay Mining, profits were substantially lower than in 1970. The lower earnings were the result of rising costs, especially for metals, and highly competitive world markets that prevented prices from being raised to offset higher production costs.

Assistance available under the Federal Government's Employment Support Act helped modify the adverse effect of the 10% surcharge imposed by the U.S. Government on imports of zinc and zinc products.

Both the zinc oxide and zinc dust plants operated at virtually 100% of capacity. Towards year-end the capacity of the zinc oxide plant was increased by a little more than 20%. Additional processing equipment was installed in anticipation of increased sales of ZOCOFAX photoconductive oxide. At year-end it was decided to increase the capacity of the zinc dust plant in order to achieve certain economies of scale and to take advantage of an expanding market.

A substantial research and development program is underway to improve processes and products. Additional sophisticated laboratory equipment has been purchased and installed.

At year-end Hudson Bay Mining acquired from Zinc Oxide Company of Canada Limited the latter's wholly owned operating subsidiary, Durham Industries (Canada) Ltd. The name of Durham Industries (Canada) Ltd. will be changed to one that will reflect more accurately the scope and nature of the product line.

### Hudcana Development Corporation Ltd.

Hudcana, a wholly owned subsidiary of Hudson Bay Mining, holds the Company's interests in Francana Minerals Ltd. (60%) and Tombill Mines Limited (38%). There was no change in either of these holdings during 1971.

# Operating personnel

**Base-metal  
mining, refining  
and smelting**

## Flin Flon

D. J. Robertson, general manager  
J. R. G. Sadler, assistant general manager  
L. G. Johnson, manager — personnel  
E. P. Haggarty, manager — administration  
J. R. Bray, manager — mines  
A. E. Stephansson, assistant to manager — mines  
J. H. Black, superintendent — mines, Flin Flon area  
L. R. Nilsen, superintendent — mines, Snow Lake area  
R. L. Price, superintendent — Western exploration  
P. L. Martin, chief mining geologist  
J. E. Goodman, manager — metallurgy  
R. F. Coulter, superintendent — mill  
W. E. McFadden, superintendent — zinc plant  
G. H. Kent, superintendent — smelter  
J. N. Kirkbride, superintendent — research  
M. N. Collison, manager — plant services  
H. B. Goldsmith, superintendent — mechanical  
F. H. Thompson, superintendent — construction  
F. H. Gummerson, superintendent — powerhouse  
G. M. Watt, superintendent — surface and transportation  
S. H. Evans, superintendent — electrical  
R. A. Thomson, manager — computer services  
G. H. Dash, superintendent — hydro plant  
N. Iannone, superintendent — safety

**Sylvite Division  
Potash mining  
and refining**

## Rocanville

D. C. Smith, general manager  
W. G. Schultz, superintendent — mine  
F. J. Greeves, superintendent — mill  
N. J. Cyr, manager — administration

**Head Office**

## Toronto

Dr. J. B. Howkins, chief geologist  
R. B. Cairns, superintendent — Eastern exploration  
A. N. C. Gillies, manager — traffic  
J. D. Purvis, manager — metal sales  
M. A. de Vette, chief electrical engineer  
A. Epp, manager — public relations  
J. G. Hartsig, manager — potash sales  
T. A. O'Hara, manager — development group

**Exploration  
offices**

## Vancouver Whitehorse Thunder Bay

R. A. Freberg, resident geologist  
R. T. McIntosh, resident geologist  
J. D. Friesen, geologist

**Subsidiary  
companies**

## Montreal Toronto Calgary Regina Quill Creek, Yukon

D. B. Clark, general manager — Zinc Oxide Company of Canada Limited  
G. F. Clark, general manager — Hudson Bay Diecastings Limited  
N. D. Knowles, general manager — Francana Oil & Gas Ltd.  
R. V. Tomkins, general manager — Francana Minerals Ltd.  
J. H. Walsh, mine manager — Hudson-Yukon Mining Co., Limited

# Principal addresses

<b>Head Office</b>	Hudson Bay Mining and Smelting Co., Limited, P.O. Box 28, Toronto-Dominion Centre, Toronto 1, Ontario
<b>Mine offices</b>	Hudson Bay Mining and Smelting Co., Limited, Flin Flon, Manitoba R8A 1N9
	Sylvite of Canada Division of Hudson Bay Mining and Smelting Co., Limited P.O. Box 270, Rocanville, Saskatchewan S0A 3L0
<b>Exploration offices</b>	Hudson Bay Exploration and Development Company Limited P.O. Box 28, Toronto-Dominion Centre, Toronto 1, Ontario Flin Flon, Manitoba R8A 0V5
	1695 - 555 Burrard St., Bentall Centre Tower No. 2, Vancouver 1, British Columbia
	Box 4007, Whitehorse, Yukon Territory
	Box 365, Thunder Bay "P", Ontario
<b>Subsidiary companies</b>	Hudson Bay Diecastings Limited P.O. Box 1050, Brampton, Ontario
	Zinc Oxide Company of Canada Limited P.O. Box 40, Station D, Montreal 22, Quebec
	Francana Oil & Gas Ltd. 401 Pacific 66 Plaza, 700 - 6th Ave. S.W., Calgary 1, Alberta
	Francana Minerals Ltd. 520 Bank of Canada Bldg., Regina, Saskatchewan S4P 0M8
	Hudson-Yukon Mining Co., Limited Flin Flon, Manitoba R8A 1N9
<b>Transfer agents</b>	The Royal Trust Company: Montreal, Toronto, Winnipeg, Calgary, Regina, Vancouver
	Morgan Guaranty Trust Company of New York: New York, N.Y.
<b>Registrars</b>	Montreal Trust Company: Montreal, Regina, Crown Trust Company: Toronto, Winnipeg, Calgary, Vancouver
	The Chase Manhattan Bank: New York, N.Y.
<b>Auditors</b>	Deloitte, Haskins & Sells: Toronto





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